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Daniel C. Edelstein

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EXAMINER

ABOAGYE, MICHAEL

ART UNIT

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1793

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DELIVERY MODE

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Shibata (US Patent No. 6,734,556).

Shibata teaches an article formed by wire bonding a first chip to a second chip (column 2, lines 34-47); (note the examiner interprets the second chip to be functionally equivalent to the applicants claimed substrate). Said article comprising: a metallic wire material (i.e., gold wire), (column 4, lines 62-64); a metallic interconnect made of copper metal within said substrate (column 4, lines 57-60); an alloying metal made of tin deposited directly on said metallic interconnect, said alloying metal comprising alloying (i.e. said tin) metal other than said metallic wire material (i.e. said gold wire), (column 4, lines 18-20), and a resultant alloy material made of gold and tin (i.e. Au-Sn), formed between said interconnect and said metallic wire connected to said first chip (column 4, lines 18-23 and lines 54-64), said resultant alloy material formed between said metallic wire material and said alloying metal, and formed when said metallic wire is in contact with said metallic interconnect under temperature, pressure (column 4, lines 18-23), wherein said resultant Au-Sn alloy has a low melting point, thereby allowing the bonding

to be performed at a lower temperature, hence low thermal energy input required in said bonding process ( column 4, line 65-column 5, line 6).

### ***Response to Arguments***

3. The examiner acknowledges the applicants' amendment received by USPTO on May 05 2008. Claims 1-5 and 21 are remains under consideration in the application.

4. Applicants' arguments filed May 5, 2008 have been fully considered but they are not persuasive. In his remarks, Applicant asserts that Shibata teaches bump electrodes of first and second semiconductor chips both made of a first metal such as Au, while joining with a portion made of an alloy layer of the first and second metal, where the second metal is made of a material that can melt at a lower temperature than the melting point of the first metal to be alloyed with it ( Shibata, Abstract); that in several embodiments of Shibata, a joining layer must include the alloying metal from a wire. For example, in the embodiment represented by Fig. 6; that claim 1, as previously amended, is sufficiently narrow to overcome a 35 U.S.C. § 102 rejection of Shibata. It is submitted that the claims remain patentably distinct over this cited prior art and finally that the teachings of Shibata is outside the scope of claim 1. The examiner agrees with the applicant that Shibata in addition to tin metal, provides gold also as a deposit on the copper interconnect, however, it is noted that the limitations recited in claim 1, upon which applicant relies in his argument, is not distinctively distinguishable from the teachings of Shibata. Regarding the limitation in claim 1 calling for "alloying metal

comprising alloying metals other than said metallic wire material", It is noted that since "comprising" is open ended, the examiner interprets said alloying metals to include other metals and gold, with no limitation or precluding gold (i.e. the metallic wire material) . Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). During patent examination, the pending claims must be "given the broadest reasonable interpretation." Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541,550-51 (CCPA 1969).

### ***Conclusion***

**5. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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